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SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE
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METHODOLOGICAL ISSUES

GUIDELINES UNDER ARTICLES 5, 7 AND 8 OF THE KYOTO PROTOCOL

Modalities for the accounting of assigned amounts

Preliminary assigned amounts

Note by the secretariat

Addendum

Possible implications of activities under Article 3.3 and proposed activities under Article 3.4 of the Kyoto Protocol on assigned amounts

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I. INTRODUCTION

1. The Kyoto Protocol stipulates that assigned amounts for the first commitment perio shall be calculated in accordance with Article 3.7 and 3.8 and Annex B of the Kyoto Protoc The Protocol also states, in Article 7.4, that the Conference of the Parties serving as the me of the Parties to the Protocol (COP/MOP) shall, prior to the first commitment period, decid upon modalities for the accounting of assigned amounts. Additions to and subtractions fro these assigned amounts may be made in accordance with Article 3.3, 3.4, 3.10, 3.11, 3.12 and 3.13.

2. At its eleventh session, the Subsidiary Body for Scientific and Technological Advic (SBSTA) requested Parties to provide submissions on land-use, land-use change and forestr 1 August 2000 with views on, or proposals for, *inter alia*, definitions under Article 3.3,[2] an indicate how and which human-induced activities will be included under Article 3.4.[3] Parti included in Annex I to the Convention (Annex I Parties) should further include, *inter alia*, a of additional activities that each individual Party is proposing for inclusion under Article 3. Annex I Parties were further requested to provide an assessment of net changes in carbon st and changes in emissions by sources and removals by sinks, associated with the activities u Article 3.3. and 3.4 (FCCC/SBSTA/1999/14, para. 46 (g), (h) and (i)). In response to this request, the secretariat prepared a consolidated synthesis of proposals (FCCC/SBSTA/2000 and a compilation of country-specific data and information (FCCC/SBSTA/2000/9/Add.1).[4]

3. For the twelfth session of the SBSTA, the secretariat prepared a paper on "Modalitie the accounting of assigned amounts - Preliminary assigned amounts" (FCCC/SBSTA/2000/INF.7) to provide information relevant to the discussions on Articles 7, 8, 12 and 17. In that paper, the term "initial" assigned amount was used to refer to the assigned amount calculated on the basis of Article 3.7 and 3.8 and Annex B without any

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[1] All articles referred to in this paper are those of the Kyoto Protocol. For the sake of brevity, the Kyoto Pr is not specified after each article.

[2] Article 3.3 states: The net changes in greenhouse gas emissions by sources and removals by sinks resultin from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation since 1990, measured as verifiable changes in carbon stocks in each commitment period, shall be to meet the commitments under this Article of each Party included in Annex I. The greenhouse gas emissions sources and removals by sinks associated with those activities shall be reported in a transparent and verifiable manner and reviewed in accordance with Articles 7 and 8.

[3] Article 3.4 states: Prior to the first session of the Conference of the Parties serving as the meeting of the P to this Protocol, each Party included in Annex I shall provide, for consideration by the Subsidiary Body for Scientific and Technological Advice, data to establish its level of carbon stocks in 1990 and to enable an estim be made of its changes in carbon stocks in subsequent years. The Conference of the Parties serving as the mee of the Parties to this Protocol shall, at its first session or as soon as practicable thereafter, decide upon modaliti rules and guidelines as to how, and which, additional human-induced activities related to changes in greenhous emissions by sources and removals by sinks in the agricultural soils and the land-use change and forestry categ shall be added to, or subtracted from, the assigned amounts for Parties included in Annex I, taking into account uncertainties, transparency in reporting, verifiability, the methodological work of the Intergovernmental Panel Climate Change, the advice provided by the Subsidiary Body for Scientific and Technological Advice in accor with Article 5 and the decisions of the Conference of the Parties. Such a decision shall apply in the second and subsequent commitment periods. A Party may choose to apply such a decision on these additional human-indu activities for its first commitment period, provided that these activities have taken place since 1990.

[4] These documents were prepared on the basis of submissions from Parties that are compiled in documents FCCC/SBSTA/2000/MISC.6, Add.1 and Add.2.

additions or subtractions, in accordance with Article 3.3, 3.4, 3.10, 3.11, 3.12 and 3.13. That paper included examples of preliminary initial assigned amounts based on base year inventory data reported by Parties in their latest annual greenhouse gas (GHG) inventory submissions or national communications. The term "preliminary" reflects the preliminary nature of these calculations of assigned amounts.[5]

II. APPROACH

4. The aim of this paper is to provide additional preliminary information on the possible implications of different land-use, land-use change and forestry activities under Article 3.3 and 3.4 on the assigned amounts of Parties. Data in this paper are those reported by Parties in FCCC/SBSTA/2000/MISC.6 and Add.1 on projected changes in carbon stocks[6] resulting from alternative definitions of afforestation, reforestation and deforestation under Article 3.3 and possible activities under Article 3.4 for the first commitment period.[7] Data on preliminary initial assigned amounts are as provided in document FCCC/SBSTA/2000/INF.7.[8]

5. This paper, through tables 1 and 2 and their respective notes, shows the possible impact that individual activities under Article 3.3 and possible activities under Article 3.4 could have on assigned amounts. As the projected changes in carbon stocks from these activities for the first commitment period may depend on the definitions (IPCC, FAO or other) and accounting frameworks (land-based, activity-based)[9] used, the impact on the assigned amount of the activities under Article 3.3 corresponding to afforestation, reforestation and deforestation (ARD) and Article 3.4 activities was calculated individually following the various proposals as reported by Parties (see table 1).

6. The secretariat has not added the data on carbon stock changes resulting from afforestation, reforestation and deforestation, and those from proposed activities under Article 3.4 since different definitions and accounting frameworks could lead to different results and only compatible definitions and accounting frameworks can be combined. Therefore, the overall impact of total carbon stock changes from all the activities under Article 3.3 and possible activities under Article 3.4 on the assigned amount is not given in this paper. However, some Parties, in their submissions, provided estimates of total carbon stock changes for the activities under Article 3.3, namely afforestation, reforestation and deforestation, according to the different

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[5] Article 7.4 states that COP/MOP shall, prior to the first commitment period, decide upon modalities for the accounting of assigned amounts. As this decision has not been taken yet, the calculations of assigned amounts have a preliminary character.

[6] For the sake of comparability with assigned amounts that are expressed in terms of CO_2 equivalent, the secretariat converted all data on carbon stock changes (given in terms of carbon) into CO_2 by multiplying by 44/12.

[7] The full information provided by Parties on the data related to Article 3.3 and 3.4 activities can be found in documents FCCC/SBSTA/2000/MISC.6 and Add.1.

[8] Although since document FCCC/SBSTA/2000/INF.7 was issued, many Parties have provided an updated base year inventory in their latest annual GHG inventory submission, this addendum uses preliminary assigned amounts as presented in that document, for the sake of consistency.

[9] Explanations related to definitional scenarios and carbon accounting frameworks are provided in the IPCC *Special Report on Land-use, Land-use change and Forestry*, chapter 3.

definitions and accounting frameworks. For these Parties, the overall impact of these to estimates on the assigned amount is provided as examples in table 2.[10]

7. The data and information submitted by Parties in their submissions, and the data presented in this paper, by no means prejudge decisions or conclusions that may be made either the Conference of the Parties (COP) or the SBSTA at future sessions.

III. POSSIBLE ACTION BY THE SBSTA

8. The SBSTA may wish to note the information provided in this paper, particularly consideration of Articles 3.3, 3.4, 5, 6, 7, 8, 12 and 17 of the Kyoto Protocol.

IV. TABLES ON POSSIBLE IMPLICATIONS OF ARTICLE 3.3 AND PROPO ARTICLE 3.4 ACTIVITIES ON PRELIMINARY INITIAL ASSIGNED AMOU

[10] It should be noted that any estimates of total carbon stock changes from ARD activities according to different possible definitions and accounting frameworks should be calculated for each definition and acco framework used in a consistent manner across Parties.

Table 1. Possible implications of afforestation, reforestation and deforestation activities under Article 3.3 and proposed activities under Article 3.4 on preliminary initial assigned amounts in the first commitment period

Party	Activities under Article 3.3								Activities under Article 3.4				Preliminary initial assigned amount (AAU)[2]
	Afforestation (IPCC/FAO)[3]			Reforestation (FAO)			Deforestation (IPCC/FAO)						
	Accounting framework	$\Delta CO_{2,ce}$[1]	Impact on AA	Accounting framework	$\Delta CO_{2,ce}$[1]	Impact on AA	Accounting framework	$\Delta CO_{2,ce}$	Impact on AA	Accounting framework	type[4]	$\Delta CO_{2,ce}$[1]	Impact on AA	
		Gg CO_2	Per cent		Gg CO_2	Per cent		Gg CO_2	Per cent			Gg CO_2	Per cent	Gg CO_2eq
Australia	LB	56 533	3.3				LB	-211 200	-5.0	LB	1	39 989	1.5	2 643 682
Austria	AB[5]	6 882	1.9	AB	5 995	1.7	AB	-18 633	-5.0					354 908
	AB[5] (IPCC net)[6]	3 219	0.9	LB I	-23 230	-6.5								
				LB II	-422	-0.1								
Canada	AB/LB	- 1 833	-0.1	AB	-11 000	-0.4	AB/LB	-80 667	-2.9	LB	1	176 000	6.2	2 837 415
				LB I	-829 667	-29.4				LB	2a	11 286	0.4	
				LB II	-421 667	-15.0				LB	2b	47 993	1.7	
										LB	2c	75 086	2.7	
										LB	3a	7 601	0.3	
										LB	3b	25 854	0.9	
										LB	4a	1 467	0.1	
										LB	4b	2 200	0.1	
Denmark	AB/LB	1 738	0.5	AB	1 104	0.3								321 781
				LB I	-2 453	-0.8								
				LB II	-678	-0.2								
Finland	AB	2 237	0.6	AB	51 335	14.8	AB 1)[7]	-5 867	-1.7	LB	1	40 333	11.7	346 937
							AB 2)[7]	-8 800	-2.5					
France	AB - artificial	9 203	0.4	AB - artificial	30 433	1.2	AB	-20 625	-0.8	LB	R	139 518[8]	5.5	2 547 398
	AB - natural	56 368	2.2	AB - natural	14 168	0.6				LB	1	3 251[8]	0.1	
										LB	2	15 293[8]	0.6	
										LB	3	28 995[8]	1.1	
										AR	4	1 966[8]	0.1	
Germany	AB	1 967	0.1	AB	24 255	0.4	AB	-3 199	-0.1	LB	1	157 667	2.8	8 378 949
				LB I	-83 409	-1.5	AB (incl soil carbon)	-7 861	-0.1					
				LB II	-18 327	-0.3								
				AB (FAO 11)	40 425	0.7								
				LB I (FAO 11)	-139 014	-2.5								
				LB II (FAO 11)	-30 651	-0.5								
Iceland	LB	440	3.1							LB	1	9031	6.8	38 170

Table 1 *(continued)*

Party	Activities under Article 3.3									Activities under Article 3.4				Preliminary initial assigned amount (AA)[a]
	Afforestation (IPCC/FAO)[b]			Reforestation (FAO)			Deforestation (IPCC/FAO)							
	Accounting framework	ΔCO_{2CP}[c] Gg CO_2	Impact on AA Per cent	Accounting framework	ΔCO_{2CP}[c] Gg CO_2	Impact on AA Per cent	Accounting framework	ΔCO_{2CP}[c] Gg CO_2	Impact on AA Per cent	Accounting framework	Type[d]	ΔCO_{2CP}[c] Gg CO_2	Impact on AA Per cent	Gg CO_2 eq.
Ireland	AB/LB	16 768	6.8	AB	8 481	3.4								246 086
				LB I	-1 265	-0.5								
				LB II	-730	-0.3								
Italy	AB/LB	8 672	0.4							AB	2	20 321[h]	0.9	2 389 884
Japan	AB	5 016	0.1	AB	33 374	0.6	AB	-18 715	-0.3	AB	1a	208 413	3.6	5 769 730
										AB	1b	179 476	3.1	
										AB	2	1 386	0.0	
Netherlands	AB/LB	282 to 1 531	0.0 to 0.2	AB	763	0.1	AB	-242	0.0	LB/AB	1	565	0.1	1 008 349
				LB I	-1 716	-0.2	LB	-238	0.0	LB/AB	2	231	0.0	
				LB II	-477	0.0				LB/AB	3	-13 501	-1.3	
New Zealand[i]	LB	141 460	38.7											365 332
Norway	AB	917	0.3	AB	1 100	0.4	AB	-587	-0.2	AB	1	2 658	1.0	263 312
				LB I	-32 633	-12.4								
				LB II	-12 833	-4.9								
Sweden	AB/LB	3 117	1.0	AB	55 000	16.9		-4 767	-1.5	LB	1	82 500	25.3	325 502
										LB	2	1 100	0.3	
Switzerland	AB	61	0.0				AB/LB[j]	-257	-0.1	LB	1	5 317	2.2	243 824
										LB	2	106	0.0	
										LB	3	95	0.0	
										AB	5	807	0.3	
United Kingdom	LB	11 257	0.3	AB	8 474	0.2	LB	-964	0.0	LB	1	44 917	1.3	3 522 351
	LB[k]	10 699	0.3	LB I	-26 061	-0.7				LB	2	4 583	0.1	
				LB II	827	0.0								
United States of America	LB	737 000	2.6	AB	3 072 667	10.9	LB	-869 000	-3.1	LB	1	5 287 333	18.7	28 224 239
				LB I	-135 667	-0.5				LB	2	286 000	1.0	
				LB II	1 661 000	5.9				LB	3	150 333	0.5	

Notes:

This table only includes activities for those Parties for which numerical information on projected carbon stock changes over the first commitment period (ΔC_{CP}) was available. For the sake of comparability with preliminary initial assigned amounts that are expressed in terms of CO_2 equivalent, the secretariat converted all values of carbon stock changes (ΔC_{CP} in Gg C) into CO_2 (Gg) by multiplying by 44/12. Results of this multiplication indicate projected change in net CO_2 emissions or removals ($\Delta CO_{2\ CP}$) over the first commitment period resulting from the activities under Article 3.3. and 3.4. The impact (in per cent) of each activity on a Party's preliminary initial assigned amount was calculated as follows:
$\Delta CO_{2\ CP}$ / preliminary initial assigned amount *100.

A positive sign in the projected change in net CO_2 emissions or removals ($\Delta CO_{2\ CP}$) indicates either removals by sinks or an increase in carbon stocks. A negative sign indicates either emissions by sources or a decrease in carbon stocks. A positive impact on preliminary initial assigned amounts (in per cent) indicates that assigned amounts could potentially be increased, while a negative impact (in per cent) indicates that they could potentially be decreased.

For further details on the information related to ARD under Article 3.3 and Article 3.4 activities presented in this table, please refer to document FCCC/SBSTA/2000/9/Add.1, tables 2.a and 4.a and their corresponding footnotes, as well as to the submissions from Parties (FCCC/SBSTA/2000/MISC.6 and Add.1).

[a] Values given in this column represent preliminary examples of initial assigned amounts as per FCCC/SBSTA/2000/INF.7.

[b] Use of the IPCC definition was indicated by Australia, Iceland, New Zealand and Sweden. Japan indicated use of the FAO definition. The rest of the Parties considered both definitions.

[c] $\Delta CO_{2\ CP}$: Projected change in net CO_2 emissions or removals (Gg CO_2) over the first commitment period. Values for activities under Article 3.3 were based on projected carbon stock changes (ΔC_{CP} in Gg C) over the first commitment period on land afforested, reforested and deforested since 1990 up to 2012. For activities under Article 3.4, $\Delta CO_{2\ CP}$ values were calculated based on projected carbon stock changes (ΔC_{CP} in Gg C) over the first commitment period related to the Article 3.4 activity since 1990. In both cases, ΔC_{CP} values were used as presented in document FCCC/SBSTA/2000/9/Add.1 (table 2.a and 4.a, for activities under Article 3.3 and 3.4, respectively) and converted into CO_2 by multiplying by 44/12. It should be noted that methane (CH_4) and nitrous oxide (N_2O) emissions resulting from Article 3.4 activities were not considered in the calculations of $\Delta CO_{2\ CP}$.

[d] The numbers refer to activities as given in table 4.a of document FCCC/SBSTA/2000/9/Add.1. Activities for which numerical data for ΔC_{CP} have been provided by Parties are as follows: **Australia:** 1. Revegetation; **Canada:** 1. Forest management; 2. Cropland management (a: low adoption, b: medium adoption, c: high adoption); 3. Grazing land management and livestock (a: low adoption, b: medium adoption); 4. Shelterbelts (a: low adoption, b: high adoption) – The low, medium and high range of the estimates provided reflect different adoption rates of sink-enhancing practices-; **Finland:** 1. Forest management (including forest conservation); **France:** R. Reference; 1. Forest management in state forests; 2. Forest management in other public forests; 3. Forest management in private forests; 4. Conversion of mixed coppice/high forest stands into high forests; **Germany:** 1. Forest management; **Iceland:** 1. Revegetation; **Italy:** 2. Conversion of grazing lands to forest; **Japan:** 1. Forest management; 1.a. all forests; 1.b. managed forests; 2. Urban greening; **Netherlands:** 1. Forest management; 2. Cropland management; 3. Grazing land management; **Norway:** 1. Fertilization; **Sweden:** 1. Forest management; 2. Forest conservation; **Switzerland:** 1. Establishment of carbon forests and forest reserves to increase carbon stock; 2. Cropland management; 3. Cropland conversion to grassland; 5. Increased use of wood products and other long term wood materials; **UK:** 1. Forest management; 2. Bioenergy crops; **USA:** 1. Forest management; 2. Cropland management; 3. Grazing land management.

[e] For the land-based accounting framework it was reported that figures would be approximately the same as the corresponding afforestation and reforestation figures for "IPCC, activity-based" and "IPCC net, activity-based", respectively.

[f] IPCC definitions for ARD are used. However, the afforestation and reforestation areas were reduced by the deforestation area.

[g] Option 1: Area information 1990-1998 is registered by Statistics Finland; from 2000 onwards, projected deforestation rate is 10,000 ha/a; Option 2: Estimates are based on the previous Finnish National Forest Inventory, provided that previous deforestation rate of 15,000 ha/a would continue.

[h] France, Iceland and Italy have not provided any estimates for ΔC_{CP} in their submissions, but reported the corresponding projected changes in net CO_2 emissions or removals ($CO_{2, CP}$). For these Parties, values in this col are as provided in their submissions.

[i] This table presents the total of afforestation and reforestation activities, which include grassland to planted fore shrublands to planted forest and grassland to shrublands or forest.

[j] A land use/flexible scenario has also been reported. Under this scenario the deforestation value was reported t the same as under the IPCC and FAO definitions.

[k] The United Kingdom has also provided data for afforestation using another definition in addition to the IPCC FAO definitions ("Other") which was defined as "net approach".

Table 2. Possible implications of total afforestation, reforestation and deforestation activities under Article 3.3 on preliminary initial assigned amounts in the first commitment period

Table 2.a. **Austria**
Preliminary initial assigned amount (AA):
354 908 Gg CO_2 eq.

Approach	ARD total Gg CO_2	Impact on AA Per cent
IPCC	-3 751	-1.1
FAO - AB	2 244	0.6
FAO - LB I	-26 987	-7.6
FAO - LB II	-4 173	-1.2
IPCC net	3 219	0.9

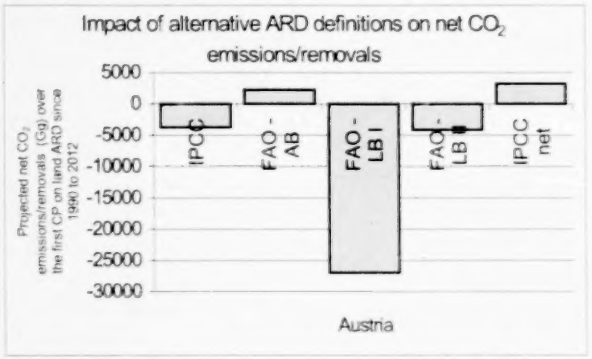


Table 2.b. **Denmark**
Preliminary initial assigned amount (AA):
321 781 Gg CO_2 eq.

Approach	ARD total Gg CO_2	Impact on AA Per cent
IPCC - AB	1 738	0.5
IPCC - LB	1 738	0.5
FAO - AB	2 842	0.9
FAO - LB I	-715	-0.2
FAO - LB II	1 060	0.3

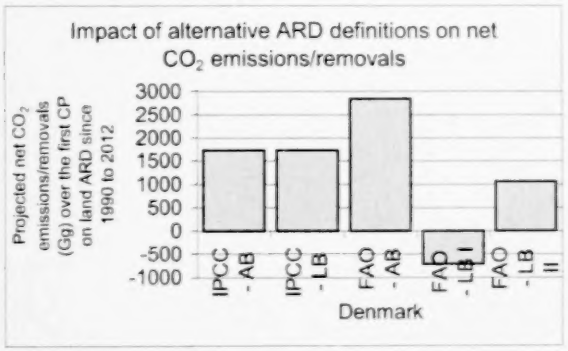


Table 2.c. **France**
Preliminary initial assigned amount (AA):
2 547 394 Gg CO_2 eq.

Approach	ARD total Gg CO_2	Impact on AA Per cent
IPCC (AR artificial)	-11 422	-0.4
IPCC (AR total)	44 946	1.8
FAO (AR artificial)	19 012	0.7
FAO (AR total)	89 551	3.5

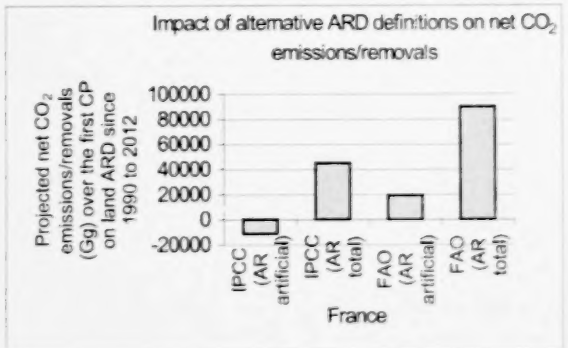


Table 2.d. **Netherlands**
Preliminary initial assigned amount (AA):
1 008 349 Gg CO_2 eq.

Approach	ARD total Gg CO_2	Impact on AA Per cent
IPCC - AB	39	0.00
IPCC - LB	43	0.00
FAO - AB	802	0.08
FAO - LB I	-1 673	-0.17
FAO - LB II	-438	-0.04

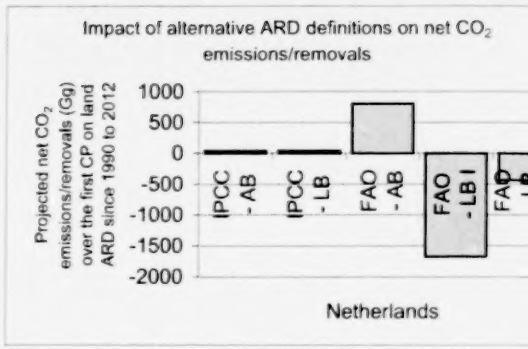


Table 2.e. **Norway**
Preliminary initial assigned amount (AA):
263 312 Gg CO_2 eq

Approach	ARD total Gg CO_2	Impact on AA Per cent
IPCC - AB	330	0.1
FAO - AB	1 467	0.6
FAO - LB I	-32 267	-12.3
FAO - LB II	-12 467	-4.7

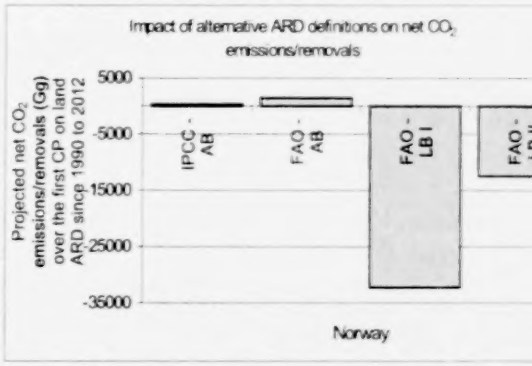
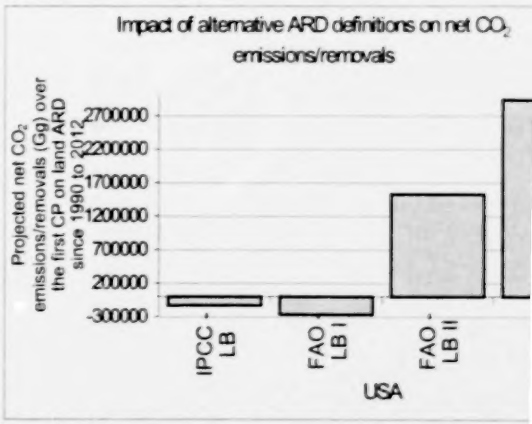


Table 2.f. **United States of America:**
Preliminary initial assigned amount (AA):
28 224 239 Gg CO_2 eq.

Approach	ARD total Gg CO_2	Impact on AA Per cent
IPCC - LB	-132 000	-0.5
FAO - AB	2 940 667	10.4
FAO - LB I	-267 667	-0.9
FAO - LB II	1 529 000	5.4



Notes:

Only Parties that provided estimates of total carbon stock changes due to afforestation, reforestation and deforestation activities for the first commitment period (ΔC_{CP}) are included in these tables.

Total projected changes in net CO_2 emissions or removals resulting from afforestation, reforestation and deforestation, referred to in table 2 as ARD total, are calculated by multiplying the projected carbon stock change over the first commitment period (ΔC_{CP}) by 44/12. The impact that total ARD activities according to the different definitions and accounting frameworks may have on preliminary initial assigned amounts are calculated as follows: ARD total / preliminary initial assigned amount *100 (see table1).

A positive sign in the ARD total indicates either removals by sinks or an increase in carbon stocks. A negative sign indicates either emissions by sources or a decrease in carbon stocks. A positive impact on preliminary initial assigned amounts (in per cent) indicates that assigned amounts could potentially be increased, while a negative impact (in per cent) indicates that they could potentially be decreased.

Each table is accompanied by a figure that illustrates the total projected change in net CO_2 emissions or removals over the first commitment period on land afforested, reforested and deforested since 1990 to 2012 according to the different definitions and accounting frameworks used.

The following abbreviations, symbols and units have been used in tables 1 and 2:

AB	Activity-based
ARD	Afforestation, reforestation, deforestation
C	Carbon
CO_2	Carbon dioxide
CO_2 eq.	CO_2 equivalent
CP	Commitment period (2008-2012)
Gg	Gigagram (10^9 grams)
LB	Land based (LB I - Land based I; LB II - Land based II)

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